

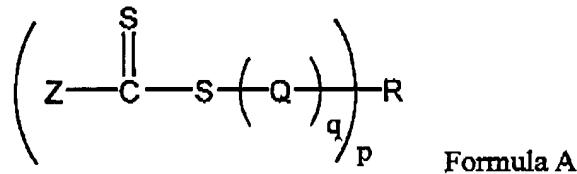
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Amendments to Claims

1-10. (original claims withdrawn from consideration in view of the restriction requirement)

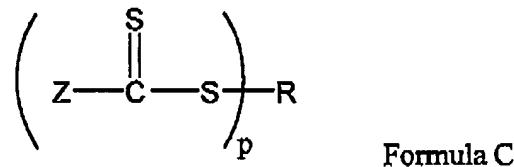
11. (previously added, previously amended and currently amended) A process for the synthesis of a block polymer of the general formula:



comprising contacting:

(i) [a monomer] one or more vinyl monomers of structure $\text{CH}_2=\text{CUV}$ [having repeating units of Q], and;

(ii) a chain transfer agent:

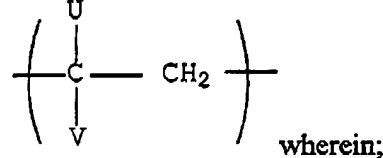


having a chain transfer constant greater than about 0.1; and

(iii) free radicals produced from a free radical source;

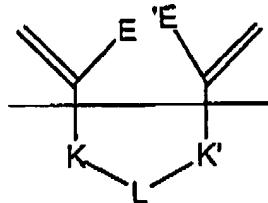
wherein:

Q is:



U is selected from the group consisting of hydrogen, halogen, and optionally substituted C₁-C₄ alkyl wherein the substituents are independently selected from the group that consists of hydroxy, OR", carboxy, O₂CR", and CO₂R";

V is selected from the group consisting of hydrogen, R" and halogen, provided when Q is styrene or methyl methacrylate, Z is not alkoxy; [ex Q is of the formula:



wherein E, E' are independently selected from the group consisting of H, CH₃, CN, CO₂Alkyl, and Ph; K, K' are selected from the group consisting of CH₂, C=O, Si(CH₃)₂, and O; L is selected from the group consisting of C(E)₂, O, N(Alkyl)₂ salts, P(Alkyl)₂ salts, and P(O)Alkyl₂;]

wherein:

Z is optionally substituted alkylthio; optionally substituted alkoxy; dialkyl- or diaryl-phosphonato; or dialkyl- or diaryl- phosphinato;

R is selected from the group consisting of optionally substituted alkyl; optionally substituted alkenyl; optionally substituted alkynyl; an optionally substituted saturated, unsaturated or aromatic carbocyclic or heterocyclic ring; and a polymer chain prepared by any polymerization mechanism; in agent C, R[•] is a free-radical leaving group that initiates free radical polymerization;

R" is selected from the group consisting of optionally substituted C₁-C₁₈ alkyl, C₂-C₁₈ alkenyl, aryl, heterocyclyl, aralkyl, alkaryl wherein the substituents are independently selected from the group that consists of epoxy, hydroxy, alkoxy, acyl, acyloxy, carboxy and carboxylates, sulfonic acid and sulfonates, alkoxy- or aryloxy-carbonyl, isocyanato, cyano, silyl, halo, and dialkylamino;

q is 1 or an integer greater than 1; and

p is 1.

12. (previously added and previously amended) The process according to claim 11, wherein said polymer chain in R is poly(ethylene oxide); R" is carboxy and carboxylates, or sulfonic acid and sulfonates; or wherein L is diallyldimethylammonium chloride.

13. (previously added) The process according to claim 11, wherein Q is styrene, a functional styrene, butadiene, chloroprene, an acrylate ester, a methacrylate ester or an acrylonitrile.

14. (previously added) The process according to claim 13, wherein Q is vinyl acetate.

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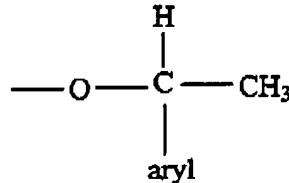
15. (previously added) The process according to claim 11, wherein R is an alkyl group substituted with substituents selected from the group consisting of aryl, alkenyl, alkynyl and alkyl groups.

16. (previously added) The process according to claim 11, wherein R is an alkyl group substituted with a substituent selected from the group consisting of aryl, alkenyl and alkynyl groups.

17. (previously added and previously amended) The process according to claim 11, wherein R is methyl.

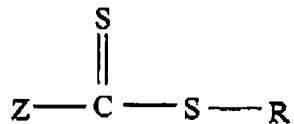
18. (previously added) The process according to claim 11, wherein Z is optionally substituted alkoxy.

19. (previously added) The process according to claim 18 wherein said Z is:



20. (previously added) The process according to claim 11 wherein Q is styrene, methyl acrylate, ethyl acrylate, butyl acrylate, tert-butyl acrylate, vinyl acetate, or acrylic acid wherein Z is alkoxy and R is optionally substituted alkyl wherein said optional substituents are alkoxy carbonyl and alkyl, or two alkoxy carbonyls.

21. (previously added) The process according to claim 11, wherein the chain transfer agent is a polymer made by contacting a monomer having the formula CH₂=CUV with free radicals from a free radical source and a compound having the formula:



22. (previously added) The process according to claim 11 wherein in the chain transfer agent p = 1, R is alkyl and Z is optionally substituted alkoxy, said optional substituents being alkyl and alkoxy carbonyl, or two alkoxy carbonyls.

23-27 (previously added and withdrawn from consideration in view of the restriction requirement)

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28. (previously added) The process according to claim 11 comprising increasing the ratio of (ii) to (iii) and obtaining a polymer having a polydispersity in the range of 1.6 to 2.0.

29. (previously added) The process according to claim 28, wherein the polymer so obtained has a polydispersity of about 1.5.

30. (previously added) The process according to claim 11, wherein Z is optionally substituted alkoxy.

31. (previously added) The process according to claim 11, wherein the polymer has at least two polymer blocks of polystyrene/polymethyl acrylate.

32. (previously added) The process according to claim 21 comprising increasing the ratio of (ii) to (iii) and obtaining a polymer having a polydispersity in the range of 1.6 to 2.0.

33. (previously added) The process according to claim 32, wherein the polymer so obtained has a polydispersity of about 1.5.

34. (previously added) The process according to claim 21, wherein Z is optionally substituted alkoxy.

35. (previously added) The process according to claim 21 wherein Z is alkoxy and R is optionally substituted alkyl wherein said optional substituents are alkoxycarbonyl and alkyl, or two alkoxycarbonyls.

36. (previously added) The process according to claim 21 wherein Q is styrene, methyl acrylate, ethyl acrylate, butyl acrylate, tert-butyl acrylate, vinyl acetate, or acrylic acid wherein Z is alkoxy and R is optionally substituted alkyl wherein said optional substituents are alkoxycarbonyl and alkyl, or two alkoxycarbonyls.

37. (previously added) The process according to claim 11, wherein substituents in R and Z comprise alkylcarbonyloxy, aryloxycarbonyl, carboxy, acyloxy, cyano, arylalkylcarbonyl, hydroxy, halogen, amino, epoxy, or alkoxy.

38. (previously added and withdrawn from consideration in view of the restriction requirement).

39. (previously added) The process according to claim 11, wherein the substituents in R" are independently selected from the group that consists of epoxy, hydroxy, alkoxy, carboxy, sulfonic acid, and halo.

40. (previously added and withdrawn from consideration in view of the restriction requirement).

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41. (previously added and withdrawn from consideration in view of the restriction requirement).